

This listing of claims will replace all prior versions, and listings of claims in the application.

Listing of Claims:

Claim 1. (Currently Amended) A bypass graft comprising:

a tubular portion configured to extend and to form a conduit between at least a pair of blood vessels and having an internal tubular diameter, a first end, a second end opposite the first end, and a central axis; and

[[a]] at least one flared portion having an adjoining end and a compliant flared end formed to facilitate anastomosis, wherein said adjoining end is integrally formed on and is substantially concentric with said second end, and said adjoining end has a radius not less than a radius of said second end, wherein said at least one flared portion comprises an interior surface formed, such that ~~said interior surface does not generate a dilating force, and~~ said flared end has a flared end internal diameter, such that said internal flared end diameter is greater than said internal tubular diameter; whereby said at least one flared portion comprises a circumferential skirt adapted for surgical attachment of said graft to ~~a patient's~~ one of said blood vessels, wherein said graft is ~~monolithic~~ formed without intervening seams or overlap.

Claim 2. (Canceled)

Claim 3. (Original) The graft of claim 1, wherein said graft is made from a polymer selected from the group consisting of polyether urethanes, polycarbonate urethanes, polyester urethanes, silicone polyether urethanes, silicone polycarbonate urethanes, and PHMO polyurethanes.

Claim 4. (Original) The graft of claim 3, wherein said polyether urethane comprises a polyether urethane-urea.

Claim 5. (Original) The graft of claim 4, wherein said polyether urethane-urea further comprising an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 6. (Original) The graft of claim 4, wherein said polyether urethane-urea is end-capped with dibutylamine.

Claim 7. (Original) The graft of claim 1, wherein said graft comprises:

an inner first micro-porous layer of polyether urethane-urea comprising about 1% to about 5% by weight of an additive formed by condensing MDI, polydimethylsiloxane, and 1,4-butanediol;

a second nonporous layer of polyether urethane-urea comprising about 1% to about 5% by weight of said additive; and

a third porous layer of a polyether urethane-urea comprising about 1% to about 5% of said additive.

Claim 8 (Original) The graft of claim 7, wherein said first layer is contiguous with said second layer.

Claim 9. (Original) The graft of claim 7, wherein said second layer is contiguous with said third layer.

Claim 10. (Original) The graft of claim 7, wherein said first layer contains pores having an average diameter of less about 38 microns.

Claim 11. (Original) The graft of claim 7, wherein said third layer contains pores having an average diameter less than about 38 microns.

Claim 12. (Original) The graft of claim 1, wherein said flared end has a flared end central axis, which is at an oblique angle to said central axis of said tubular portion.

Claim 13. (Canceled)

Claim 14. (Original) The graft of claim 12, wherein said graft is made a polyether urethane-urea and said polyether urethane-urea further comprises an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 15. (Original) The graft of claim 1, wherein said circumferential skirt is oriented for attaching at an acute angle to said blood vessel.

Claim 16. (Canceled)

Claim 17. (Currently Amended) The graft of claim ~~[[16]]~~15, wherein said graft is made from a polyether urethane-urea and said polyether urethane-urea further comprises an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 18. (Original) The graft of claim 1, wherein said flared end has a flared end central axis, which is parallel to said central axis of said tubular portion.

Claim 19. (Canceled)

Claim 20. (Original) The graft of claim 18, wherein said graft is made from a polyether urethane-urea and said polyether urethane-urea further comprises an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 21. (Original) The graft of claim 1 wherein said circumferential skirt is elongated.

Claim 22. (Canceled)

Claim 23. (Original) The graft of claim 21, wherein said graft is made from a polyether urethane-urea and said polyether urethane-urea further comprises an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 24. (Original) The graft of claim 1, wherein said graft comprises reinforcing member wound around and substantially concentric with said tubular portion.

Claim 25. (Canceled)

Claim 26. (Previously Presented) The graft of claim 24, wherein said graft is made from a polyether urethane-urea and said polyether urethane-urea further comprises an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 27. (Original) The graft of claim 1, wherein said flared end is asymmetrically flared with respect to said central axis of said tubular portion, such that said skirt has a substantially elliptically-shaped circumference.

Claim 28. (Canceled)

Claim 29. (Original) The graft of claim 27, wherein said graft is made from a polymer selected from the group consisting of polyether urethanes, polycarbonate urethanes, polyester urethanes, silicone polyether urethanes, silicone polycarbonate urethanes, and PHMO polyurethanes.

Claim 30. (Original) The graft of claim 29, wherein said polyurethanes comprise a polyether urethane-urea.

Claim 31. (Original) The graft of claim 30, wherein said polyether urethane-urea further comprising an additive in the amounts in a range of about 1% to about 5% by weight, said additive formed by condensing a combination of MDI, polydimethylsiloxane, and 1,4-butanediol.

Claim 32. (Original) The graft of claim 30, wherein said polyether urethane-urea is end-capped with dibutylamine.

Claim 33. (Original) The graft of claim 27, wherein said graft comprises:

an inner first micro-porous layer of polyether urethane-urea comprising about 1% to about 5% by weight of an additive formed by condensing MDI, polydimethylsiloxane, and 1,4-butanediol;

a second nonporous layer of polyether urethane-urea comprising about 1% to about 5% by weight of said additive; and

a third porous layer of a polyether urethane-urea comprising about 1% to about 5% of said additive.

Claim 34. (Original) The graft of claim 33, wherein said first layer is contiguous with said second layer.

Claim 35. (Original) The graft of claim 33, wherein said second layer is contiguous with said third layer.

Claim 36. (Original) The graft of claim 33, wherein said first layer contains pores having an average diameter of less about 38 microns.

Claim 37. (Original) The graft of claim 33, wherein said third layer contains pores having an average diameter of less than about 38 microns.

Claim 38. (Original) A graft of claim 27, wherein said skirt comprises an opening for attaching said skirt at an acute angle to said blood vessel.

Claim 39. (Original) The graft of claim 27, wherein the flared end comprises an elliptically-shaped opening, which is oriented at an oblique angle to said central axis of said tubular portion.

Claim 40. (Original) The graft of claim 27, wherein said circumferential skirt is elongated.

Claim 41. (Original) A method for manufacturing a bypass graft, comprising the steps of:

providing a mandrel having a tubular portion and a flared end bulb with a flared end central axis;

forming at least one layer of polyurethane over said mandrel;

drying said at least one layer of polyurethane, on said mandrel;

forming a skirt edge around said flared end bulb of said mandrel to form an opening at a predetermined angle to said flared end central axis;

forming a second edge around said tubular portion of the mandrel; and

removing said graft from said mandrel.

Claim 42. (Original) The method of claim 41, further comprising the steps of.

providing a first source of polyurethane comprising polymeric solids and sodium chloride particles, such that said sodium chloride particles are in an amount equal to about 1400% by weight of said polymeric solids;

applying a first layer of said source of polyurethane over said mandrel; and

leaching said sodium chloride particles from said first layer to form pores.

Claim 43. (Original) The method of claim 41, further comprising the steps of.

providing a third source of polyurethane comprising polymeric solids and sodium chloride particles, such that said sodium chloride particles are in an amount equal to about 600% by weight of said polymeric solids;

applying a third layer of said third source of polyurethane over said mandrel; and

leaching said sodium chloride particles from said third layer to form pores.

Claim 44. (Original) The method of claim 41, further comprising the steps of:

wrapping said graft with a reinforcing means; and

securing said reinforcing means by applying a polyurethane layer thereover.

Claim 45. (Original) The method of claim 41, wherein the step of forming at least one layer of polyurethane over said mandrel comprises drawing said mandrel through said source of polyurethane.

Claim 46. (Original) The method of claim 45, wherein the step of forming at least one layer of polyurethane comprises repeatedly drawing said mandrel through said source of polyurethane.

Claim 47. (Original) The method of claim 41, further comprising the step of forming said skirt edge and controlling a length of said graft by applying a mask to said mandrel to limit exposure of the surface of said mandrel to said source of polyurethane.

Claim 48. (Original) The method of claim 47, further comprising the step of cutting the flared end of said graft subsequent to removal of said mandrel to impart an asymmetrical opening on said graft.

Claim 49. (Original) The method of claim 41, wherein the step of forming at least one layer of polyurethane over said mandrel comprises dipping said mandrel into said source of polyurethane.

Claim 50. (Original) The method of claim 49, wherein the step of forming at least one layer of polyurethane comprises repeatedly dipping said mandrel through said source of polyurethane.

Claim 51. (Original) The method of claim 49, further comprising the step of controlling a length of said graft by limiting a depth to which said mandrel is dipped into said source of polyurethane.

Claim 52. (Original) The method of claim 50, further comprising the step of forming said skirt edge and controlling a length of said graft by applying a mask to said mandrel to limit exposure of the surface of said mandrel to said source of polyurethane.

Claim 53. (Original) The method of claim 49, further comprising the step of cutting the flared end of said graft subsequent to removal of said mandrel to impart an asymmetrical opening on said graft.

Claim 54. (Original) The method of claim 41, wherein the step of forming at least one layer of polyurethane over said mandrel comprises spraying said source of polyurethane onto said mandrel.

Claim 55. (Original) The method of claim 54, wherein the step of forming at least one layer of polyurethane comprises repeatedly spraying said source of polyurethane onto said mandrel.

Claim 56. (Original) The method of claim 54, further comprising the step of forming said skirt edge and controlling a length of said graft by applying a mask to said mandrel to limit exposure of the surface of said mandrel to said source of polyurethane.

Claim 57. (Original) The method of claim 54, further comprising the step of forming said skirt edge and controlling a length of said graft by directing a sprayed stream of said source of polyurethane onto a selected portion of said mandrel.

Claim 58. (Original) A bypass graft produced in accordance with the method of claim 41.

Claim 59. (Currently Amended) A bypass graft comprising:

a tubular portion configured to extend and to form a conduit between at least a pair of blood vessels and having an internal tubular diameter, a first end, a second end opposite the first end, and a central axis; and

a first flared portion and a second flared portion, each having an adjoining end and a compliant flared end formed to facilitate anastomosis, wherein said adjoining end is integrally formed on and is substantially concentric with said first end and said second end, respectively, and said adjoining end has a radius not less than a radius of said first end and said second end, respectively, wherein each of said flared portions comprises an exterior surface formed, such that ~~said exterior surface does not generate a shrinking force, and~~ said flared end has a flared end internal diameter, such that said internal flared end diameter is greater than said internal tubular diameter; whereby each of said flared portions comprises a circumferential skirt adapted for surgical attachment of said graft to ~~a patient's~~ one of said blood vessels, wherein said graft is ~~monolithic~~ formed without intervening seams or overlap.